UNITED STATES
CLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

M/037/001

JUN 15 1988

URFO:HDR
Docket No. 40-8084
SUA-1119, Amendment No. 18
04008084950E

Rio Algom Mining Corporation
ATTN: Bob Pattison
La Sal Route
Moab Utah 84532

Gentlemen:

The NRC has received Letter of Credit No. 20-88/9016 issued by the Canadian Imperial Bank of Commerce, New York Office in favor of the NRC for $3,000,000. We have determined that this instrument satisfies the requirements of Criteria 9 and 10 of 10 CFR 40, Appendix A. This cost estimate will serve as the basis for the required annual updates until such time as the NRC approves the revised reclamation plan currently under review and agrees to a revised estimate.

The following amendment to Rio Algom's license establishes an anniversary date of April 15 for annual update of your surety instrument. As specified in this revised license condition, 90 days prior to the anniversary date (beginning 1989) you must submit, in the form of a request for amendment, your proposed annual update to the cost estimate and surety instrument even if the only change in the estimate is to adjust for inflation as prescribed in Criterion 10.

Amendment No. 18 removes the NRC requirement for Rio Algom to maintain a surety arrangement with the State of Utah Board of Oil, Gas and Mining. The surety arrangement between Rio Algom and the State of Utah may therefore be terminated at any time following issuance of this amendment.

Therefore, pursuant to Title 10, Code of Federal Regulation, Part 40, Source Material License SUA-1119 is hereby amended to approve your proposed surety instrument, specify a surety amount and establish an anniversary date for annual surety updates by revising License Condition No. 27 to read as follows:

27. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, for reclamation of any tailings or waste disposal areas, ground water restoration as warranted and the long-term surveillance fee. Within three (3) months of NRC approval of a revised reclamation/decommissioning plan, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within three (3) months of written NRC approval. Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least three (3) months prior to the anniversary date designated in this condition. If the NRC has not approved a proposed revision to the surety coverage 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for one year.

Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The licensee shall also provide the NRC with all surety related correspondence submitted to the State, a copy of the State's surety review and the final approved surety arrangement, if applicable. The licensee shall also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC portion of the surety and covers the decommissioning and decontamination of the mill and mill site, reclamation of the tailings and waste disposal areas, soil and water sample analyses to confirm decontamination, ground water restoration as warranted and the transfer of the long-term surveillance fee to the U.S. General Treasury. The basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan. The attachment to this license, entitled "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates" outlines the minimum

considerations used by the NRC in the review of site closure estimates. Reclamation/decommissioning plans and annual updates should follow this outline.

Rio Algom's currently approved surety instrument, Irrevocable Letter of Credit No. 20-88/9016 issued by the Canadian Imperial Bank of Commerce, New York Office, in favor of the NRC, shall be continuously maintained in an amount no less than $3,000,000 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC. For the purposes of NRC's annual review, Rio Algom's anniversary date is designated as April 15 of each successive year.

All other conditions of this license shall remain the same. The license is being issued in its entirety to incorporate the revision specified above.

This matter has been discussed with Mr. Bob Pattison of Rio Algom. If you have any questions, please contact Mr. Howard Rose of my staff on (303) 236-2816.

Sincerely,

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Enclosure: Source Material License SUA-1119

cc: Ken May, Assoc. Dir Mining
Div. of Oil, Gas & Mining
355 West North Temple
3 Triad Center
Suite 350
Salt Lake City, UT 84180-1203

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Rio Algom Mining Corp.	3. License number: SUA-1119, Amendment No. 18
2. La Sal Route Moab, Utah 84532	4. Expiration date: September 30, 1989
	5. Docket or Reference No.: 40-8084

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
Natural Uranium	Any	Unlimited

9. Authorized place of use: The licensee's uranium milling facilities located in San Juan County, Utah.

10. The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings generated by the licensee's milling operations authorized by this license.

11. For use in accordance with statements, representations, and conditions contained in Sections 5.1.1, 5.1.3, 5.1.4, 5.2, 5.3, 5.4, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5, 5.5.9, and Appendices 5.5.2, 5.5.3.3, and 5.5.5 of the licensee's renewal application dated December, 1982, as modified by the supplements submitted by letters dated May 30, 1984, August and September 1984, December 6, 1985, January 30, July 21, and August 14, 1986, November 20, 1987, and January 12, 1988 except where superseded by license condition below. Reductions in radiation safety program requirements during periods of mill shutdown as authorized by this license shall not be implemented until the licensee has performed and documented cleaning and securing of the mill process building.

In addition, the licensee shall comply with Section 6.0 of the renewal application as modified in the supplement submitted by letter dated May 31, 1985, except that specific names and telephone numbers shall be updated as necessary. Such updates shall not require an amendment to this license.

Whenever the word "will" is used in the above referenced sections, it shall denote a requirement.

12. The mill production per calendar year shall not exceed 900 metric tons of U_3O_8.

13. Any changes in the mill circuit, as illustrated and described in Figure 3.1-2 of the licensee's renewal application, shall require approval of the USNRC in the form of a license amendment.

14. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with Section 20.203(e)(2) and with the words, "Any area within this mill may contain radioactive material."

15. The results of sampling, analyses, surveys and monitoring; the results of calibration of equipment; reports on audits and inspections; all meetings and trainings courses required by this license; and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in USNRC regulations, all such documentation shall be maintained for a period of at least five (5) years.

16. The licensee shall maintain effluent control systems as specified in Section 5.5.8 of the licensee's renewal application with the following additions:

    A. Operations shall be immediately suspended in the affected area of the mill if any of the emission control equipment for the yellowcake drying or packaging areas is not operating within specifications for design performance.

    B. The licensee shall, during all periods of yellowcake drying operations, assure that the scrubber is operating within the manufacturer's recommended ranges for water flow and air pressure differential necessary to achieve design performance. This shall be accomplished by either (1) performing and documenting checks of water flow and air pressure differential approximately every four hours during operation or (2) installing instrumentation which will signal an audible alarm if either water flow or air pressure differential fall below the manufacturer's recommended levels. If an audible alarm is used, its operation shall be checked and documented daily.

    C. Air pressure differential gauges for other emission control equipment shall be read and the readings documented once per shift during operations.

17. All liquid effluents from mill process buildings, with the exception of sanitary wastes, shall be returned to the mill circuit or discharged to the tailings impoundment.

18. Release of equipment or packages from the restricted area shall be in accordance with Attachment No. 1 to SUA-1119, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September, 1984.

19. Mill tailings other than samples for research shall not be transferred from the site without specific prior approval of the USNRC in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

20. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the USNRC and no such disturbance shall occur until the licensee has received authorization from the USNRC to proceed.

    In addition, all work in the immediate vicinity of any buried cultural deposits unearthed during the disturbance of land shall cease until approval to proceed has been granted by the USNRC.

21. The licensee shall conduct an annual survey of land use (private residences, grazing areas, private and public potable water and agricultural wells, and non-residential structures and uses) in the area within five miles (8 km) of any portion of the restricted area boundary and submit a report of this survey to the USNRC, Uranium Recovery Field Office. This report shall indicate any differences in land use from that described in the last report.

22. The results of all effluent and environmental monitoring required by this license shall be reported in accordance with 10 CFR 40, Section 40.65 with copies of the report sent to the USNRC, Uranium Recovery Field Office. Monitoring data shall be reported in the format shown in the Attachment No. 2 to SUA-1119, "Sample Format for Reporting Monitoring Data."

23. The licensee shall have in operation, within four (4) months of issuance of this license, instrumentation to detect ruptures of the tailings discharge and solution return lines when these lines are being utilized. Indications of a possible rupture of these lines shall result in activation of an alarm in an occupied area of the mill. The instrumentation shall be tested daily, and testing documented, to ensure proper operation.

24. The licensee shall immediately notify the USNRC, Uranium Recovery Field Office, by telephone and telegraph, of any failure to the tailings dam or tailings discharge and solution return system which results in a release of radioactive material and/or of any unusual conditions which if not corrected could lead to such a failure. This requirement is in addition to the requirements of 10 CFR 20.

25. Before engaging in any activity not previously assessed by the USNRC, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not assessed or that is greater than that

assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the USNRC in the form of a license amendment.

26. The licensee shall implement a program to minimize dispersal of dust from the ore stockpile area(s). This program shall include written operating procedures. The effectiveness of the control method used shall be evaluated weekly by means of a documented inspection.

27. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, for reclamation of any tailings or waste disposal areas, ground water restoration as warranted and the long-term surveillance fee. Within three (3) months of NRC approval of a revised reclamation/decommissioning plan, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within three (3) months of written NRC approval. Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least three (3) months prior to the anniversary date designated in this condition. If the NRC has not approved a proposed revision to the surety coverage 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for one year.

Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The licensee shall also provide the NRC with all surety related correspondence submitted to the State, a copy of the State's surety review and the final approved surety arrangement, if applicable. The licensee shall also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC portion of the surety and covers the decommissioning and decontamination of the mill and mill site, reclamation of the tailings and waste disposal areas, soil and water sample analyses to confirm decontamination, ground water restoration as warranted and the transfer of the long-term surveillance fee to the U.S. General Treasury. The basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan. The attachment to this license, entitled "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates" outlines the minimum considerations used by the NRC in the review of site closure estimates.
Reclamation/decommissioning plans and annual updates should follow this outline.

Rio Algom's currently approved surety instrument, Irrevocable Letter of Credit No. 20-88/9016 issued by the Canadian Imperial Bank of Commerce, New York Office, in favor of the NRC, shall be continuously maintained in an amount no less than $3,000,000 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC. For the purposes of NRC's annual review, Rio Algom's anniversary date is designated as April 15 of each successive year.

28. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of Utah), which is used for the disposal of such byproduct material or is essential to ensure the long term stability of such disposal site to the United States or the State of Utah.

29. In addition to the representations contained in Section 5.5.9 of the licensee's renewal application, the licensee shall submit a detailed decommissioning plan to the USNRC at least twelve (12) months prior to planned shutdown of mill operations.

30. Occupational exposure calculations shall be performed and documented within one week of the end of each regulatory compliance period as specified in 10 CFR 20.103 (a)(2) and 10 CFR 20.103 (b)(2). Routine airborne ore dust and yellowcake samples shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Non-routine ore dust and yellowcake samples shall be analyzed and the results reviewed by the RSO within two working days after sample collection.

31. The tailings impoundment area shall not be expanded by raising the heights of the present dams or constructing a new dam except as authorized by this license.

32. The licensee shall implement an interim stabilization program for all tailings not covered by standing water. This program shall include written operating procedures and shall minimize dispersal of blowing tailings. The effectiveness of the control method used shall be evaluated weekly by means of a documented tailings area inspection.

33. Standard written operating procedures (SOP's) shall be established for all operational process activities involving radioactive materials that are handled, processed, or stored. Standard operating procedures for operational activities shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for nonoperational activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the mill area to which it applies.

All written procedures for both operational and nonoperational activities shall be reviewed and approved in writing by the RSO before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing operating procedures at least annually.

34. The licensee shall submit to the USNRC, Uranium Recovery Field Office, for review and approval in the form of a license amendment a proposed radiation safety program for the future acid circuit at least three (3) months prior to the planned initiation of operations in the acid circuit.

35. Processing of waste material from the Allied Chemical Company shall be in accordance with the statements, representations and conditions contained in the licensee's submittal dated July 16, 1982. Processing of waste material from Mallinckrodt, Inc. shall be in accordance with the statements, representations and conditions contained in the licensee's submittal dated August 24, 1983. Processing of waste material from the Unical-Molycorp, Louviers, Colorado plant shall be in accordance with the statements, representations and conditions contained in the licensee's submittals dated July 13 and August 19, 1987. Additionally, the licensee shall establish and implement documented in-plant procedures for the handling and slurrying of the alternate feed materials. Radiation safety aspects of the procedures shall be revised and approved by the mill Radiation Safety Officer prior to implementation.

36. Disposal of waste from Westinghouse Electric Corporation's Bingham Canyon ion exchange facility shall be in accordance with the licensee's submittal dated March 20, 1984. The location of the disposal site shall be as shown on Figure 1 submitted by letter dated March 21, 1984. The licensee shall establish and implement procedures for the handling and disposal of the waste material, and radiation safety aspects of the procedures shall be reviewed and approved by the mill Radiation Safety Officer prior to implementation.

37. The licensee is authorized to release barrels which do not meet the decontamination limits specified in Condition No. 18 of this license to a facility authorized to possess the barrels under a specific source material license issued by the State of Utah. All waste material resulting from decontamination of the barrels shall be returned to the Lisbon Mill for disposal in the tailings ponds.

Prior to releasing contaminated barrels to a facility, the licensee shall provide documentation to the Uranium Recovery Field Office, USNRC, to verify that the facility possesses a source material license authorizing possession of the barrels. In addition, all releases of barrels and receipt of waste material authorized under this condition shall be documented.

38. The licensee shall be required to use a Radiation Work Permit (RWP) issued by the RSO or his designate for work or nonroutine maintenance jobs where the potential for exposure to radioactive material exists and for which no standard written operating procedures exist. The RWP shall at least describe the following:

    A. The scope of the work to be performed.

    B. Any precautions necessary to reduce exposure to uranium and its daughters.

    C. The supplemental radiological monitoring and sampling necessary before, during, and following completion of the work.

39. Notwithstanding the inspection program specified in Section 5.1.3 of the renewal application, the licensee shall comply with the following:

    A. The RSO or his designee shall conduct documented walk-through inspections of all work and storage areas on days of mill operations to ensure implementation of good radiation safety practices.

    B. The RSO or his designee, if the RSO is unavailable, shall during operational mill periods, conduct weekly documented inspections of all work and storage areas to observe general radiation safety practices, and during a period of mill shutdown shall conduct monthly documented inspections of all work and storage areas to observe general radiation control practices.

    A summary of inspection results shall be included in the monthly report prepared by the RSO as discussed in Section 5.1.3 of the renewal application.

40. During mill operational periods the licensee shall submit a copy of the report documenting semiannual ALARA audits committed to in section 5.1.4 of the renewal application. During periods of mill shutdown the licensee shall submit a copy of the report documenting an annual ALARA audit committed to in section 5.1.4 as modified by letter dated November 20, 1987. Submittals required by this condition shall be submitted to the USNRC, Uranium Recovery Field Office, within one (1) month of completion of the report.

41. All mill process workers shall be provided on-the-job training on the radiation safety aspects of the job to be performed prior to beginning work activities and annually thereafter. The on-the-job training, as well as all other training committed to in Section 5.3 of the renewal application, shall be documented.

42. The licensee shall comply with the following additions to the bioassay program committed to in Section 5.5.4 of the renewal application:

A. Baseline urinalysis shall be performed for all new employees prior to start of work activities.

B. The licensee is released from the commitment in their license application dated December 1982, for performing routine in-vivo measurements every two years. In-vivo measurements shall be performed in accordance with the recommendations contained in Revision 1 of Regulatory Guide 8.22.

C. Laboratory surfaces used for bioassay analyses shall be decontaminated to less than 25 dpm alpha (removable)/100 cm^2 prior to analysis of samples.

D. Anytime an action level of 15 ug/l uranium for urinalysis or 9 nCi uranium for an in-vivo measurement is reached or exceeded, the licensee shall provide documentation to the USNRC, Uranium Recovery Field Office, indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22. This documentation shall be included and submitted with the semiannual 10 CFR 40.65 report.

E. Anytime an action level of 30 ug/l uranium for four consecutive speciments or 130 ug/l uranium for one speciment for urinalysis or 16 nCi uranium for an in-vivo measurement is reached or exceeded, the licensee shall provide documentation within 30 days to the USNRC, Uranium Recovery Field Office, indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22.

43. The licensee shall perform and document weekly checks of the alpha survey meters used in the personnel and surface contamination control program using a radiation check source.

44. The licensee shall implement the inspection programs for the upper and lower tailings embankments and the Bisco Lake embankment as specified in their May 17, 1984, August 20, November 17, 1987, and November 20, 1987 submittals subject to the following modifications and additions:

A. Embankment piezometers shall be read monthly during operational mill periods. During periods of mill shutdown, embankment piezometers shall be read quarterly. On an annual basis, the piezometers shall be examined and tested for proper functioning. The available records and readings of these instruments shall also be reviewed quarterly to detect any unusual performance or distress in the structure.

B. The maintenance of operating facilities and features (such as pumps and valves) that pertain to the safety of the retention system shall be examined to determine the adequacy and quality of the maintenance procedures followed in maintaining the dam and facilities in safe operating condition.

C. The professional responsible for the technical evaluation shall ensure that field inspectors are trained to recognize and assess signs of possible distress or abnormality.

D. The results of piezometer and pond level measurements shall be maintained in graphical form.

E. A copy of each annual technical evaluation report shall be submitted to the USNRC, Uranium Recovery Field Office, within one (1) month of completion of the report.

45. The licensee shall comply with the following:

A. For the upper tailings pond, the licensee shall maintain at least 2.75 feet of freeboard between the embankment crest and the maximum pond operating level.

B. For the lower tailings pond, the licensee shall maintain at least 8.5 feet of freeboard during the period of May 1 through October 31, 1988, and at least 11 feet of freeboard thereafter, between the maximum pond operating level and Stage I dam crest elevation of 6651 feet msl. Further, the licensee shall maintain at least 10.0 feet of freeboard between the maximum pond operating level and the Stage II dam crest elevation of 6661 feet msl.

C. Water levels in the upper and lower tailings ponds shall be read and recorded weekly, unless the ponds are receiving tailings in which case water levels will be read and recorded daily.

D. During normal operations, at least 100 feet of beach shall be maintained between the crest of the lower tailings dam and the ponded water.

46. Construction, maintenance, and operation of the upper tailings retention system shall be in accordance with the specifications, representations, recommendations and commitments contained in:

"Report of Geotechnical Evaluation to Support The Request For A Five-Foot Dam Raise, Upper Tailings Pond--Embankment System," Dames and Moore, August 22, 1980.

In addition, whenever the word "should" appears in the section of the above document entitled "Design Recommendations", it shall denote a requirement.

47. Construction, maintenance and operation of the lower tailings pond embankment, with a Stage I crest at 6651 feet above mean sea level and a Stage II crest at

6661 feet above mean sea level, shall be in accordance with the specifications, representations, recommendations and commitments contained in the following documents:

A. "Report of Geotechnical Engineering Study, Proposed Raise of Lower Tailings Pond Embankment System to Maximum Crest Elevation of 6661 Feet, Lisbon Mine and Mill, LaSal, Utah" by Dames & Moore, dated March 17, 1981.

B. "Tailings Dam Improvement and Flood Control Structures, Lisbon Valley Operations, Near Moab, Utah, for Rio Algom Corporation" by Dames & Moore, dated October 14, 1981, transmitted by letter from Rio Algom Corporation to Ross A. Scarano, USNRC, dated November 4, 1981.

Notwithstanding conflicting information in the submittals referenced above, embankment fill material shall be compacted on the dry side of the optimum moisture content as determined by AASHTO T-180 (-3 percent to +1 percent).

48. The licensee shall submit a set of construction specifications to the USNRC, Uranium Recovery Field Office, for review and approval prior to placement of embankment fill for the final stage of the two-staged raise of the lower tailings pond embankment. The specifications shall include a quality assurance soils testing program detailing frequencies of tests to be performed during the embankment construction.

49. The licensee shall notify USNRC, Uranium Recovery Field Office, at least three weeks prior to the following construction features of the two-staged lift of the lower tailings pond embankment to provide adequate time for on-site inspections by the NRC:

A. During Stage II embankment fill placement at approximately 10 percent and 80 percent stages of completion.

B. After completion of Stage II construction and prior to placement of tailings above the Stage I maximum operating level.

The licensee shall submit to the USNRC, Uranium Recovery Field Office within six months of completion of construction of the Stage II lift, a construction report summarizing construction equipment used, construction procedures, problems encountered, methods used to resolve these problems, and quality control procedures and test results for embankment fill material.

50. Construction and maintenance of the flood diversion structures shall be in accordance with the specifications, representations, recommendations, and commitments contained in:

A. "Supplementary Information for Flood Control and Diversion Structures, Rio Algom Uranium Mining Facility, LaSal, Utah" by Dames & Moore, August 26, 1981.

B. "Report on the Design of Flood Control and Diversion Structures, Rio Algom Uranium Mining Facility, LaSal, Utah" by Dames & Moore, September 8, 1981.

51. The licensee shall conduct an environmental monitoring program as specified in Section 5.5.6.1 and Table 5.5-5 of the renewal application dated December, 1982, as modified by the supplement dated December 6, 1985, with the following modifications:

A. Radon monitoring shall be conducted continuously using passive monitoring devices which are exchanged and read at least quarterly.

B. Except as superseded by the requirements of License Condition No. 53 below, the licensee shall implement groundwater monitoring programs as follows:

(1) During mill operational periods the licensee shall implement a groundwater monitoring and seepage control program as specified in the submittal dated September 21, 1984. In addition, the licensee shall collect and report water level data from the following:

MW wells 1, 2, 4, 5, 6A, 7, 8, 9, 10, 11, and 12; H wells 38, 48, 49, 55, 56, 57, 71, 72, 73, 77, and 78; LT wells 1 through 15; GW wells 17, 19, 20; RW wells 1 and 2; UT wells 1 through 8; D wells 3 and 10, and DM wells 80-1, 80-2, 80-3, and 80-4.

(2) During a period of mill shutdown the licensee shall conduct its groundwater monitoring and seepage control program as specified in Table 5.5-5 of the submittal dated November 20, 1987. Notwithstanding statements to the contrary in the November 20, 1987 submittal, the licensee shall comply with the following:

The licensee shall collect and report semiannually water level data, pH, SO_4, chloride, conductivity, arsenic, and selenium data for MW wells, 1, 4, 5, 7, and 13; H well 56; and RW well 1. The licensee shall also analyze samples semiannually for uranium natural and Radium-226 for MW wells 2, 4, 5, and 7. In addition, the licensee shall determine, annually, water levels in wells listed in b.(1) above.

C. During mill operational periods the licensee shall implement a surface water monitoring program as specified in the submittal dated September 21, 1984. In addition, sediment samples shall be collected at the surface water

sampling sites. During periods of mill shutdown, the licensee shall implement a surface water monitoring program as specified in the submittals dated July 21, August 14, 1986 and November 20, 1987. In addition, sediment samples shall be collected at the surface water sampling sites.

D. Recovery well No. OW-UT9 shall be continuously pumped back to the upper tailings pond.

E. The lower limits of detection (LLD) to be utilized for sample analysis shall be as specified in the submittals dated September 29 and December 16, 1984, with the exception that the LLD for analysis of Pb-210 in water shall be 2.0 E-9 μCi/ml.

F. Continuous air samplers shall be calibrated and the calibration documented at least quarterly.

G. Notwithstanding the requirement of the submittals dated July 21 and August 14, 1986 and November 20, 1987, the licensee shall implement a program to monitor vegetation consistent with the renewal application dated December 1982 as modified by the supplement submittal dated December 6, 1985.

52. The licensee shall submit to the USNRC, Uranium Recovery Field Office, by December 31, 1985, a detailed reclamation plan which includes the following:

A. A stabilization plan which details methods to prevent blowing, ponding, and recharge of the tailings;

B. A plan to dewater and/or consolidate the tailings;

C. Plan and cross-sectional views of the final reclaimed area which detail the location and elevations of tailings and cover materials;

D. Detailed plans for placement of rock or vegetative cover on the final reclaimed tailings pile;

E. A proposed implementation schedule for items A through D above;

F. An analysis to show that the proposed type and thickness of soil cover is adequate to provide appropriate attenuation of radon;

G. An erosion analysis to show that the proposed cover materials will provide long-term isolation of tailings.

53. The licensee shall implement a ground water detection monitoring program to ensure compliance to 40 CFR 192.32(a)(2) which includes the following elements:

A. The licensee shall monitor at the point of compliance and background wells for the following indicator parameters: Arsenic, Selenium and pH. The licensee shall utilize analytical techniques capable of providing lower limits of detection of 0.005 mg/l and 0.001 mg/l for arsenic and selenium, respectively. Measurements of pH shall be reported to the nearest 1/10 standard unit.

B. The determination of compliance shall be based on sampling Wells H-49(a), H-55 and H-56.

C. The determination of background levels for the parameters specified in subsection (A) shall be defined by sampling Well MW-5.

D. The licensee shall sample for those parameters specified in subsection (A) at those wells designated in subsections (B) and (C) on a monthly basis for a period of one (1) year and at least twice annually thereafter. The first monthly sample shall be taken within 30 days of the date of this Order. All semiannual samples shall be taken at least four months apart.

E. The licensee shall, within 60 days of collection of the last of the twelve monthly samples, propose for USNRC review and approval in the form of a license amendment background levels for indicator parameters and a statistical procedure for identifying significant changes (95% confidence level) between data from the wells specified in subsections (B) and (C).

F. The licensee shall report the data required by subsection (D) semiannually along with those data required by License Condition No. 22 in accordance to the reporting format, Attachment No. 3 to SUA-1119, "Sample Format for Reporting Detection Monitoring Data." These monitoring requirements are in addition to the requirements specified in License Condition No. 52.

G. The licensee shall report at least annually in accordance to reporting requirements specified in subsection (F) the rate and direction of ground water flow under the tailings impoundment.

54. In accordance with the submittals dated December 15, 1986 and January 12, 1988, the licensee is authorized to dispose of a maximum of 3000 cubic yards of contaminated materials and soil within the location shown on Figure 1 of the

License number SUA-1119

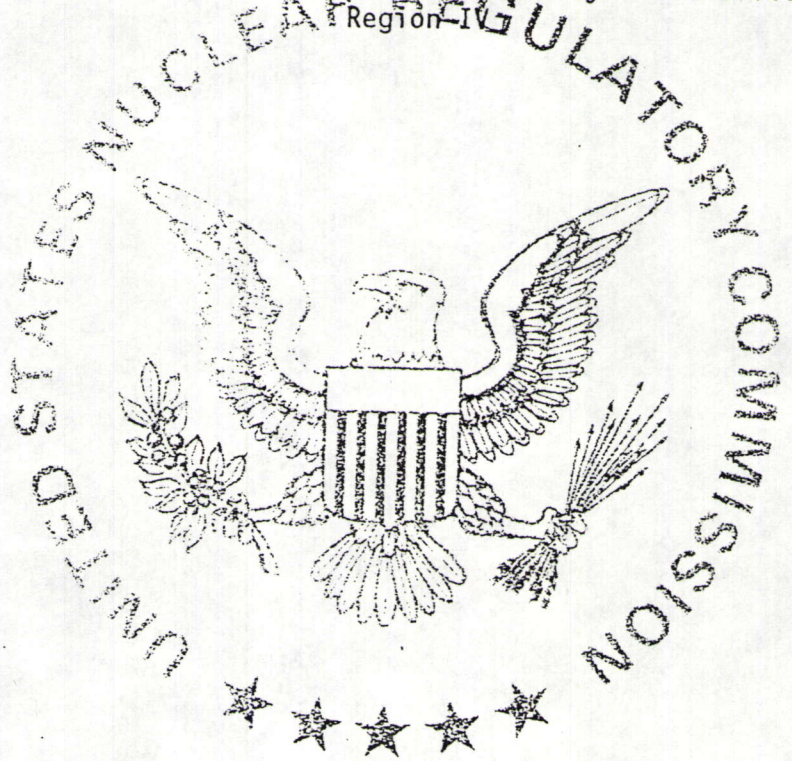
Docket or Reference number 40-8084

licensee's December 15, 1986 submittal. Further, all barrels or equipment shall be crushed or disassembled to the maximum extent possible to minimize void space. The disposals shall be completed by March 31, 1989 and shall be documented.

FOR THE NUCLEAR REGULATORY COMMISSION

Dated: JUN 15 1988

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV



RECOMMENDED OUTLINE FOR SITE SPECIFIC RECLAMATION AND STABILIZATION COST ESTIMATES

As required under Criteria 9 and 10 of 10 CFR Part 40, Appendix A, the licensee shall supply sufficient information for NRC to verify that the amount of coverage provided by the financial assurance accounts for all necessary activities required under the license to allow the license to be terminated. Cost estimates for the following activities (where applicable) should be submitted to NRC with the initial license application or reclamation plan and updated annually as specified in the license. Cost estimates must be calculated on the basis of completion of all activities by a third party. Unit costs, calculations, references, assumptions on equipment and operator efficiencies, etc., must be provided.

Detailed Cost Information Breakdown for Mills and In-Situ Facilities

The detailed cost information necessary to verify the cost estimates for the above categories of closure work is described in the following outline.

I. FACILITY DECOMMISSIONING

Mill Site Decommissioning. - Dismantling, decontamination and/or disposal of all structures and equipment. - Excavation and burial of contaminated earth (in vicinity of mill site, ore storage area, access roads around the perimeter of the tailings disposal site, evaporation pond residues, etc.) - Reclamation of disturbed areas from the above clean up activities.

In-Situ Facility Decommissioning - This includes dismantling, decontamination and disposal of all structures and equipment. This may be accomplished in two phases. In the first phase, only the equipment not used for ground-water restoration is removed. The remaining equipment would be removed in a second phase, when ground-water restoration and well plugging is complete. The buildings used for the in-situ operations may be decontaminated and released for unrestricted use.

A. Salvageable building and equipment decontamination (list). For each building or pieces of equipment listed, the following data should be provided

1. Labor for dismantling and decontamination:

a. Person-hours and categories of labor;

b. Average hourly wage for each category;

c. Total labor cost (benefits, insurance, etc., and all labor overhead must be included here or calculated on the basis of total project labor).

2. Equipment and material for dismantling and decontamination:

a. Itemization of equipment and material to be used for decontamination;

b. Itemized cost for material and equipment cost per hour listed in (a) above (equipment costs must include hourly operating, ownership and overhead expenses);

c. Operating hours for each piece of equipment;

d. Total equipment and material cost.

B. Non-salvageable building and equipment disposal

1. List of major categories of building and equipment to be disposed of and their corresponding quantities:

a. Structures (list each major) (tons of material and building volume cubic feet);

b. Foundation concrete (cubic yards);

c. Process Equipment (tons);

d. Piping & Insulation (lump sum);

e. Electrical & Instrumentation (lump sum).

2. Unit cost of disposal for each item above (include equipment, labor, material, transportation, and disposal costs).

3. List and state how each chemical solution within the mill area will be disposed of along with the associated cost of disposal.

4. Total cost.

C. Restoration of contaminated areas (ore storage pad, access roads, process area, affected ground water, evaporation pond residues, etc.)

Removal and Disposal of Evaporation Pond and Residues - These materials should be transported to a licensed tailings area or licensed disposal site. The quantity of material to be removed and the distance to the disposal site and the fees charged by the receiving facility are important considerations in determining the costs of disposal.

Reclamation - This entails recontouring the well fields and evaporation ponds and placing top soil or other materials acceptable to NRC. This may also include revegetation.

1. Removal:

   a. Area, depth and quantity of material to be removed (area, feet and cubic yard--or size of liner if appropriate);

   b. Unit cost (include excavation, loading, transportation and deposition);

   c. Total cost (equipment and labor).

2. Revegetation:

   a. Area to be revegetated (acre);

   b. Unit cost (include fill material replacing topsoil, and revegetation cost);

   c. Total cost (equipment, labor and materials).

II. GROUND-WATER RESTORATION AND WELL PLUGGING

Mill Site Ground-Water Restoration - A major concern in the termination of a mill license is the restoration of aquifers that have been contaminated by the operation of a tailings impoundment. As this concern is added to the site-specific reclamation plans, the licensee should include these costs in their surety until the licensee is released from further ground water restoration activities.

In-Situ Site Ground-Water Restoration - In most cases, ground-water restoration consists of ground water sweeping and water treatment with partial reinjection. The water treatment equipment used during the uranium recovery phase of the operation is generally suitable for the restoration phase. The capital cost of this equipment is usually absorbed during the initial stages of the operation leaving

only the costs of operation, maintenance and replacement filters for the restoration phase. However, if additional equipment will be required for restoration, associated costs should be detailed here.

A. Method of restoration

B. Volume of aquifer required to be restored - area and thickness of aquifer -- number of required pumping cycles -- cycling time

C. Equipment associated with aquifer restoration (e.g., RO unit)

D. Verification sample analysis

1. number of samples;

2. unit cost for sample collection and analysis (per sample);

3. total cost for verification sample analysis.

E. Well plugging

1. number of drill holes to be plugged;

2. depth and size of each drill hole;

3. material to be used for plugging--include acquisition, transportation, and plugging;

4. Total cost for well plugging.

F. Total cost for ground-water restoration

III. INTERIM STABILIZATION OF TAILINGS DURING THE DRYING OUT PHASE

Interim Stabilization of the Tailings During Drying - Placement of soil, chemical spraying, snow fences or other control measures over dry tailings to minimize dusting or dispersal of particulates.

A. Drying time

B. Area of dry exposed tailings for each year during the drying period (acres for ____ years)

C. Unit cost for placement of soil, chemical spraying or other methods (Price per acre) (Include material, labor, and equipment)

D. Cost for an enhanced evaporation system, where included in the reclamation and stabilization plan. - Capital costs, labor and operating costs

E. Total cost of interim tailings stabilization

IV. TAILINGS IMPOUNDMENT AREA RECLAMATION

Tailings Impoundment Area Reclamation - Earthwork necessary to recontour the tailings in order to prepare for cover placement. - Placement of cover materials - Revegetation and/or placement of riprap. - Construction of diversion channels or other measures required for long-term stability.

A. Area and quantity of cover material (acres, cubic yards)

B. Location and size of borrow area that serves as a source of cover material. (Include distance from borrow area to tailings impoundment, grade and quantity of material from each borrow area)

C. Labor and equipment unit cost for each type of material (include excavation, loading, transportation, depositing, spreading, and compacting; detailing costs and equipment types and calculations for each function)

D Estimated costs for revegetation of tailings pile, if applicable, and borrow areas (labor, equipment and materials)

E. Estimated costs for riprap/rock armor, if applicable (labor, materials, transportation and equipment)

F. Estimated costs for special engineered features - diversion channels, spillways, etc. (in unit costs) (labor, materials and equipment)

G. Estimated costs for a quality assurance program including field and laboratory testing to assure that the "as built" system conforms to design specifications. Indicate number and type of tests, labor and equipment costs.

H. Fencing costs (unit costs for labor and materials) total length and type of material

I. Additional control measures, if necessary (guard service, etc.)

J. Total cost

If the reclamation plan calls for different layers of soil, such as clay, etc., Items IVA. through IVF. above should be provided for each layer. Reclamation estimates may not always have to include the entire project area (i.e., operations which involve phased reclamation need only include coverage for the maximum area impacted during the period of the license.).

V. RADIOLOGICAL SURVEY AND ENVIRONMENTAL MONITORING

Radiological Survey - Gamma surveys and soil samples for radium in areas to be released for unrestricted use. Soils around the mill building, tailings piles, well field, evaporation ponds and process buildings should be analyzed for radium content. A gamma survey of all areas should be made prior to release for unrestricted use. All equipment released for unrestricted use should be surveyed and records maintained.

A. Soil samples for radium

B. Decommissioning equipment and building smear samples

C. Gamma survey

D. Environmental monitoring

Costs of labor, materials and analysis for continuation of environmental monitoring program throughout reclamation.

E. Total cost

1. Number of each kind sample listed above;

2. Unit cost for sample and analysis (price per sample);

3. Total cost for radiological survey.

VI. PROJECT MANAGEMENT COSTS AND MISCELLANEOUS

Itemize estimated costs associated with project management, engineering changes, mobilization costs, legal expenses, power costs during reclamation, quality control radiological safety costs, etc.

VII. LABOR AND EQUIPMENT OVERHEAD, CONTRACTOR PROFIT

Overhead costs for labor and equipment and contractor profit may be calculated as separate items or loaded into hourly rates. If included in hourly rates, the unit costs must identify the percentages applied for each area.

VIII. LONG-TERM SURVEILLANCE AND CONTROL (FOR MILLS ONLY) CRITERION 10 SPECIFIES A MINIMUM OF $250,000 IN 1978 DOLLARS ($407,960 IN DECEMBER 1986 DOLLARS).

Long-term surveillance and control fund to cover the cost of federal government agency site inspection, monitoring, and control measures, if necessary.

IX. CONTINGENCY.

The licensee should include a contingency amount to the total cost estimate for the final site closure. The staff currently considers a 15% contingency to be an acceptable minimum amount.

X. ADJUSTMENTS TO SURETY AMOUNTS.

The licensee is required by 10 CFR 40, Appendix A, Criteria 9 and 10 to adjust their cost estimates annually to account for inflation and changes in reclamation plans. The submission should be in the form of a request for amendment to the license.

A. Adjustments for inflation

The licensee should submit a revised surety incorporating adjustments to the cost estimates for inflation ninety (90) days prior to each anniversary of the date on which the first reclamation plan and cost estimate was approved. The adjustment should be made using the inflation rate indicated by the change in the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics.

B. Changes in Plans

- Changes in the process such as size or method of operation.
- Licensee initiated changes in reclamation plans or reclamation/decommissioning activities performed.
- Adjustments to reclamation plans required by the NRC.
- Proposed revisions to reclamation plans must be thoroughly documented and cost estimates and the basis for cost estimates detailed for NRC review and approval. Where a licensee is authorized by the NRC to secure a surety arrangement with the state, no reduction to the surety amount shall be initiated without prior NRC approval. Copies of all correspondence relating to the surety between the licensee and the State shall

be provided to the NRC. If authorized by the NRC to maintain a surety with the State as the beneficiary, it is the responsibility of the licensee to provide the NRC with verification of same, ensure that the agreement with the State specifically identifies the financial surety's application to the mill facility, ISL facility, tailings and related area decommissioning/reclamation and transfer of the long-term surveillance and control fee to the U.S. Department of the Treasury prior to license termination.

All costs (unit and total) are to be estimated on the basis of independent contractor costs (include overhead and profit in unit costs or as a percentage of total). Equipment owned by the licensee and the availability of licensee staff should not be considered in the estimate to reduce cost calculations. All costs should be based on current year dollars. Credit for salvage value is generally not acceptable on the estimated costs.

The NRC staff review may include a comparison of unit cost estimates with standard construction cost guides (e.g., Dodge Guide, Data Quest) and discussions with appropriate state or local authorities (highway cost construction). The licensee should provide supporting information or the basis for their selection of the unit cost figures used in their estimates.